

Final Report

Substance Abuse and Treatment Needs Among Pregnant Women in Wisconsin

Submitted to:

Wisconsin Department of Health and Family Services

By:

Lyric Dold, M.A., M.S.

**Wisconsin Survey Research Laboratory University of Wisconsin - Extension Madison,
Wisconsin**

August, 1998

ACKNOWLEDGEMENTS

This report is based upon research made possible by the collaborative efforts of the Federal Center for Substance Abuse Treatment, the National Technical Center at Harvard University, Michael Quirke and Pam Imm of the Wisconsin Department of Health and Family Services and the personal interviewing team at the Wisconsin Survey Research Laboratory within the University of Wisconsin-Extension.

We also wish to thank the participating perinatal clinics and respondents without whom this project could not have been completed.

Table of Contents

Background	1
Method	3
Selection of Counties	3
Selection of Perinatal Clinics	6
Selection of Respondents	7
Data Sources	9
Procedures	9
Interview Instruments	10
Data Handling	11
Data Entry/Editing	11
Urine Specimens.....	11
Participation Rates.....	12
By County	12
Ways to Improve Participation Rates in Personal Interviews	13
Use of Data on Pregnant Women from the Household Telephone Survey and County Birth Statistics	14
Findings: Description of Variables	17
Respondent Characteristics	17
Use of Alcohol and Other Drugs	34
Previous and Current Use of Alcohol	34
Previous and Current Use of Other Drugs	35
Honesty factor	39
Comparison: Self-Report To Drug Screen Results	39
Do Perinatal Medical Practitioners Ask Pregnant Patients about Their Substance Use?	41

DSM-III-R Abuse and Dependence Criteria	42
ASAM-Based Current or Ever Diagnoses	42
ASAM-Based Diagnosis by Population Strata	43
Met and Unmet Demand for Treatment	48
Treatment History	49
Barriers to Treatment/Unmet Demand for Treatment	52
Limitations/Sources of Error and Proposed Corrections Or Adjustments..	53
Comparisons with Other Studies	54
Prevalence Findings	54
Conclusions and Recommendations	57

Appendices

Appendix A - Wisconsin Birth Statistics Comparisons

Appendix B - Literature Review

Appendix C - Informed Consent Form (not available)

Table of Figures

Table 1 Population Characteristics of Personal Interview Sample Counties	5
Table 2 Week of Pregnancy of Adult Personal Interview Respondents	18
Table 3 Age, Education, Marital Status, Ethnicity and Number of Dependent Children of Adult Personal Interview and Telephone Respondents	20
Table 4 Annual Household Income of Adult Personal and Telephone Interview Respondents	32
Table 5 Arrests in the Last 12 Months for Adult Personal and Telephone Respondents	33
Table 6 Previous and Current use of Drugs (adult in-person and telephone)	36
Table 7 ASAM-Based DSM-III-R Ever and Current Diagnosis (Adult In-Person and Telephone)	43
Table 8 County Population Density for Respondents	44
Table 9 ASAM-Based Referral to Treatment Intensity (Adult In-Person and Telephone)	48
Table 10 History of Adult Respondents' Treatment Experiences	50
Table 11 Treatment Experience and Needs by Population Strata (n=567)	52
Table 12 Substance Use Prevalence During Pregnancy Rates from Recent Studies	56
Figure 1: Occupation of Respondents	29
Figure 2: Previous and Current Use of Alcohol	35
Figure 3: Percent of Respondents with Current Alcohol Abuse/Dependence by Population Strata	46

BACKGROUND

Each year in Wisconsin there are about 68,000 live births, 15,000 induced abortions, 1,000 fetal and infant deaths and about 25,000 miscarriages. This results in about 109,000 pregnancies in Wisconsin each year. A wide range of problems are associated with the use of alcohol and other drugs by women during pregnancy. The potential problems include inadequate prenatal care, preterm labor, placental abruption, premature delivery, low birth weight infants, decreased fetal growth, fetal malformations, child development problems, stillbirth, neonatal mortality, sudden infant death, and other adverse pregnancy outcomes. Wisconsin's caution to pregnant women is any use of alcohol or mood-altering drugs can increase the risk of fetal and developmental defects.

Clinicians, educators and policy-makers need objective data on the prevalence of substance abuse by pregnant women to provide more effective prevention, intervention, treatment, and other services for women and their infants. Despite the attention given to issues of substance abuse and pregnancy, little data on the prevalence of substance abuse among pregnant women in Wisconsin currently exists.

About six years ago, Congress passed a law (P.L. 102-321 Sec. 1929) requiring the Department of Health and Human Services to obtain needs assessment data from states in exchange for the allocation of Block Grant funds. Wisconsin receives over \$20 million from this fund. This study is funded under a federal Substance Abuse and Mental Health Services Administration (SAMHSA) needs assessment contract (270-95-0011). The study closely followed the guidelines and protocols developed by SAMHSA and the National Technical Center at Harvard University. This report fulfills one of the goals of the needs assessment contract, which was to provide substance abuse prevalence and treatment need data to state planners and policy makers. In addition to this study, the federally funded project includes four other studies: (1) a treatment capacity study; (2) a statewide household substance abuse telephone survey; (3) a composite indicators study; and (4) an arrestee study.

To conduct the study, the State Department of Health and Family Services entered into a subcontract with the Wisconsin Survey Research Laboratory to complete interviews and urine screens on a sample of Wisconsin pregnant women (primarily adults) receiving prenatal services (n=493). In addition, 74 pregnant women interviewed as part of a larger household telephone survey were also included in the analysis. The study is designed to accurately determine the prevalence of substance abuse and dependency and corresponding treatment needs among pregnant women. The reader may wish to peruse the Literature Review (Appendix B) to learn more about previous research on this topic.

METHOD

Selection of Counties

A representative sample of five Wisconsin counties was selected for the survey using the strategy described below.

The seventy-two Wisconsin counties were divided into five groups. One group had only one county and that was Milwaukee County. One county was selected from each of the other four groups with the probability proportional to the number of births recorded for the county in 1994. This produced a probability sample of Wisconsin counties capable of representing the state's population.

The initial county selection was made as part of the original proposal. After the contract was awarded, it was decided that greater weight was to be placed on geographic distribution. To obtain a better geographic distribution, Lafayette County was randomly eliminated from the sample counties, and Jefferson County was retained. The counties in two strata were rearranged to correspond to the new criteria, and Ashland County was selected to replace Lafayette County. As a result of relatively low response rates, Dane County was added to the sample near the end of the data collection effort.

The final sample counties were Ashland, Dane, Jefferson, Manitowoc, Milwaukee and Racine. Urban areas were more heavily sampled because of their higher prevalence of illicit drug use. Table 1 summarizes their population characteristics.

Table 1 Population Characteristics of Personal Interview Sample Counties

<u>Characteristic</u>	<u>Ashland</u>	<u>Dane</u>	<u>Jefferson</u>	<u>Manitowoc</u>	<u>Milwaukee</u>	<u>Racine</u>	<u>Wisconsin</u>
1990 Population	16,307	367,085	67,783	80,421	959,275	175,034	4,891,769
Population Density per Square Mile	Small Rural 16	Large Urban 305	Large Rural 122	Small Urban 136	Metropolitan 3971	Large Urban 525	90
% of Population Residing in Cities Over 10,000 Population	0%	60%	15%	55%	97%	73%	
% Non-White	9.9%	7.1%	2.7%	2.6%	27.1%	15.6%	8.7%
Geographic Location in State	North Western	South Central	South Central	Eastern	South Eastern	South Eastern	
Estimated No. of Pregnant Women/Year	365	7,780	1,395	1,470	23,110	4,050	108,500

Selection of Perinatal Clinics

Prenatal Clinics in each of the counties were identified through city yellow pages listings and listings in The Official American Board of Medical Specialties (ABMS) Directory of Board Certified Medical Specialists.

Beginning March 1996, identified clinics were contacted by phone to set up a meeting date and time. Explanation of the study and request for participation was done in person. Clinics were offered a \$100 cash incentive to participate and gift incentives for each patient who agreed to participate were described. Since only a small number of clinics existed in Ashland, Jefferson, Manitowoc and Racine counties, every identified clinic was solicited, and some agreed to participate.

In some cases, clinics agreed to participate but never actively recruited any patients. Three clinics in Ashland County agreed, yet two were active; five clinics in Jefferson County agreed, yet four were active; four clinics in Manitowoc County agreed, yet two were active; two clinics in Racine County agreed, yet one was active. In Milwaukee County, 57 clinics were identified and ten were randomly selected and asked to participate. Nine Milwaukee County clinics agreed to participate, yet eight were active.

By August 1996, face-to-face interview pretests were being conducted in some of the counties. Throughout the data collection period which ran until September 1997, interviewers faced several hurdles such as low numbers of pregnant patients in the participating clinics, patients changing appointments or not showing up for scheduled appointments, misunderstandings about what the study was measuring and why, concerns about maintaining confidentiality and some

complaints about interfering with normal clinic routines. In many cases it was difficult to establish a comfortable rhythm of recruiting and interviewing patients in the clinic.

In April 1997, the decision was made to end data collection in Ashland, Jefferson, Manitowoc and Racine counties partially in response to the difficulties encountered in recruiting patients and partially because a representative sample had already been interviewed in those counties. The cost-effectiveness of adding Dane County because of proximity to the Survey Laboratory became a priority. Two multi-clinic agencies were solicited. One multi-clinic agency agreed to participate. In Dane County five satellite clinics agreed to participate yet one was active.

Selection of Respondents

In the original recruitment plan, subjects were to be recruited according to a time slot plan. Rough measures of the number of pregnant women per hour were to be assigned to each collection site agreeing to participate. Then, a frame consisting of all the possible four-hour selection time slots in one year for each collection site in the county was to be constructed based upon clinic hours running from 8:30 am to 5:30 p.m. A sample of time slots was to have been selected from this frame using probability proportional to size and with replacement. For each selection, one pregnant woman was to have been interviewed. Interviewers were to be instructed to go to the collection site at the sampled time and recruit/interview the first pregnant woman arriving during that slot who agreed to give an interview. Patients were offered a small gift incentive worth approximately \$10 for participating which included a packet of information about healthy habits during pregnancy.

When clinic recruitment began, it became clear that this respondent selection plan would not be possible. Most if not all of the clinics expressed emphatic concern for the confidentiality of their patients as well as concern that the patients not be overly inconvenienced when visiting for a prenatal exam. They stated that the patients' schedules were hectic and the daily routines for doctors, nurses and support staff were too complicated to accommodate the interviewers in this way. Moreover, many participating clinics had too few pregnant patients to make this protocol possible.

As a result, the protocol for recruitment of respondents catered to the convenience of each of the separate clinics. In some clinics, personal interviewers visited the clinic(s) at designated times when pregnant patients were scheduled and approached patients regarding participation. In other clinics, personal interviewers were given names of patients to phone to ask for their participation after the clinic obtained the patient's permission to release her name and phone number. In all cases, the personal interview was conducted at the convenience of the patient and data collected were completely confidential. Patients were informed by the interviewers that they could refuse to answer questions throughout the interview and could also refuse to give a urine sample.

DATA SOURCES

Procedures

Data collection procedures were approved by the University of Wisconsin Center for Health Sciences Human Subjects Committee (HSC) and approval was renewed for the second year. The project was issued a Federal Confidentiality Certificate by the Department of Health and Human Services authorizing the "withholding of names and other identifying characteristics from all persons not connected with the conduct of the research." Patients agreeing to participate were interviewed in a private room at the clinic, in their home or in another place convenient to them such as their office or another private place of their choosing.

They were informed that only a unique ID number would be used to identify them and the urine specimen. The ID number would be the only link between respondent and urine specimen. At the beginning of each interview, interviewers assured respondents that information provided in the interview would be confidential, and no identifying information would be revealed as a result of their participation in the study. Respondents were able to refuse to answer any question(s) and to refuse to give a urine specimen.

Interviewers were trained in standardized personal interviewing techniques and given pertinent information specific to the topic of substance use during pregnancy. At intervals during the study, interviewers were given feedback about their performance. Regular meetings were scheduled to discuss concerns and updates with interviewers. Interviewers and the study coordinator were in frequent telephone and email contact to track the progress of clinic recruitment and data collection.

Interview Instruments

The interview instruments used were the Substance Dependence Needs Assessment Questionnaire version 6.2 and the Diagnostic Interview Schedule for Children-2. Question topics included demographic information, alcohol and drug use behaviors, and experiences with treatment. These instruments were adapted for use with a Computer Assisted Personal Interview (CAPI) System.

DATA HANDLING

Data Entry/Editing

Each personal interviewer entered data at the time of interview into an IBM-compatible laptop computer using the CAPI (Computer Assisted Personal Interview) system with CASS (Computer Assisted Survey System) software. Data were saved on disc, and discs were mailed into the lab by the interviewers. Data were also saved in the interviewer's computer as an additional back up. Each interview was assigned a sample number at the beginning of the survey and an anonymous ID number when completed. The CASS software edited standard errors in the data at the time of

entry, and surveys were edited using different edit algorithms at the lab after interviews were completed.

Urine Specimens

When the respondent agreed to provide a urine specimen for analysis, the interviewer collected the specimen directly from the patient or gained permission from the respondent and the clinic to use a sample given at the clinic during the prenatal visit. The specimens were packaged and picked up by the medical laboratory for screening/analysis using EMIT (enzyme multiplied immunoassay technology) with confirmation. The laboratory completed a ten-panel screen of all urine specimens, and results were sent to the Wisconsin Survey Research Lab. The ten-panel screen included amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine, opiates, methadone, methaqualone, propoxyphene and phencyclidine. Interviewers reassured respondents that the results of the urine specimen analysis would be entirely confidential, and there would be no link between the specimen and their name.

PARTICIPATION RATES

By County

"Estimated response rates" or participation rates were calculated for each county by comparing the estimated number of patients approached to the final number of interviews completed in each county. It was not possible to determine an exact number of patients contacted since a significant number of clinics in all six counties insisted upon being in charge of asking patients to participate. In all of those clinics, staff were not willing to keep an exact list of the numbers of patients they approached. The recruitment procedure for the study was not standardized or controlled in any way. Interviews were gathered in a manner that catered to the wishes of the clinics. Estimated response rates based upon records kept by personal interviewers in collaboration with individual clinics were as follows: Ashland County, 58 percent; Dane County, 39 percent; Jefferson County, 58 percent; Manitowoc County, 68 percent; Milwaukee County, 65 percent and Racine County, 61 percent.

Ways to Improve Participation Rates in Personal Interviews

The study design proved awkward in several ways. In the initial phase of the study, recruiting clinics to participate was difficult. Many contacted clinics simply refused to be a part of the study. Some cited too few pregnant patients or just too busy to bother. Others just said "no." Later, staff members at clinics that originally agreed to participate were often uncooperative with the interviewer in providing information about patients to find them. If the interviewer did gain access to potential respondents, she often needed to very actively pursue them both in person and on the phone to request their participation. In one case, for example, a patient refused to participate stating that her doctor said he was not in favor of the study (even though the clinic was participating). Another patient stated her husband would not allow her to participate. Another stated the information was a "private matter" and refused. Also, there were many "no-

shows" after appointments were made for an interview. Finally, some clinics insisted upon doing their own patient recruitment. In these cases, interviewers often got the feeling that the study was not being presented as enthusiastically as they would have done it themselves. They felt potential respondents were lost as a result.

Early in the study, interviewers reported that patients were assuming they needed to have an alcohol or drug problem to participate. Interviewers emphasized that all pregnant women were eligible. Plexiglas displays describing the study were placed on the clinic registration counter in clinics that allowed them. This made it possible for patients to read about the study whenever they had appointments.

In-depth personal interviewing requires a commitment of time and energy and can be especially difficult with sensitive subject matter. A simpler study design might have increased response rates but also limited the scope of information collected. Hiring coordinators for each participating clinic might have improved response rates and efficiency but would have been costly.

The clinics contacted for participation might be more encouraged to agree if an organization or individual held in high regard by medical personnel were sponsoring the research. Letters from the Wisconsin Medical Society chairperson as well as the executive director of the Association of Wisconsin HMOs were included in the recruitment protocol, but were not necessarily enough to be motivators. Finally, it might prove helpful to conduct focus groups within the medical community prior to any interviewing to gain suggestions from them about convenient and profitable methods of conducting interviews in medical settings.

Use of Data on Pregnant Women from the Household Telephone Survey and County Birth Statistics

The sample of pregnant females from the household telephone survey study ($n=74$) is a true probability sample, and the clinic personal interview sample ($n=493$) is considered a purposive sample of pregnant females. For each approach the goal was to arrive at a "representative" sample of Wisconsin's pregnant female population. The probability sample design (telephone survey) has built in measures of accuracy and precision, i.e. coverage rate, response rate, and sample error estimates. The personal interview sample (i.e. purposive sample) has no built in measures of quality. It is important, therefore, to compare the two samples' estimates of population characteristics in order to gain some appreciation of the success of the purposive sample selection procedure. While this is a good evaluation device, it provides no guarantee of accuracy for the sample estimates.

Four population characteristics are used for the comparison, namely, age, race, education, and marital status. For completeness the results are shown separately for the household telephone sample and for the combined samples. When examining these results the reader should remember that the household telephone sample is quite small (74 completed interviews with pregnant women from 27 counties). About six percent of the female adult population is pregnant

at any given time. The household telephone survey "captured" pregnant women at a rate of about two percent.

Tables 1-9, Appendix A compare the number of in-person (personal) and telephone (household) respondents with state birth statistics by county for 1996 as well as other demographics i.e., age, education, unmarried status, and race/ethnicity. Tables 10-14, Appendix A, compare percentages of telephone and in-person respondents by age, education, race/ethnicity and unmarried status with county birth statistics.

The resulting sample analysis is generally reassuring, since both the in-person and telephone survey estimates are reasonably close to the known values. The two exceptions are in the education and marital status distributions. In the education variable, the "some college" and "college graduate" categories have estimates that are somewhat higher than the actual known percentages. Self-reporting of education tends to be a little unstable and could simply be a result of reporting error. The proportion of unmarried women (age 25-44) in the survey samples is about half that of the known population. Including sufficient persons of color, persons of lower socioeconomic status and persons at risk for serious social problems in surveys continues to be a challenge to researchers in both sample designs and response rates.

Using perinatal clinics to survey pregnant women was a fairly good initial sample design strategy, since Wisconsin surveys indicate that 99 percent of pregnant women seek and receive prenatal care. However, when considering the household income, rates of arrest, education and marital status of our survey respondents in comparison with the known population, there is some reason to believe that the sample is slightly biased. This means that the survey data is slightly more representative of pregnant women without serious social problems, and therefore, our estimates of the prevalence of substance use and abuse should be considered "low end" or slightly lower than is actually occurring because of sample design, participation rates and underreporting of substance use.

FINDINGS: DESCRIPTION OF VARIABLES

Respondent Characteristics

Respondents to the personal interview were required to be a) in any stage of pregnancy and b) receiving prenatal care in Ashland, Dane, Jefferson, Manitowoc, Milwaukee or Racine County. Interviewers completed a total of 493 personal interviews in those counties. Eleven of those respondents were adolescents. A separate youth version of the interview was used for adolescents, and the results of the 11 completed interviews are generally not shown due to the small sample. A total of 74 pregnant women were interviewed by telephone as part of the larger household telephone study. Analysis on both personal and telephone interview data sets revealed no significant differences between the two. Data from both surveys were merged where possible. The total number of respondents for personal and telephone interviews is 567. Table 2

shows the distribution of stages of pregnancy for adult personal interview respondents; stage of pregnancy was not asked of telephone respondents. Gestation is approximately 36 weeks. Most (85 percent) respondents were at least three months pregnant.

Table 2 Week of Pregnancy of Adult Personal Interview Respondents

Week of Pregnancy	Number of Respondents	% of Sample
1-4	5	1%
5-8	22	5%
9-12	46	10%
13-16	55	11%
17-20	53	11%
21-24	47	10%
25-28	58	12%
29-32	62	13%
33-36	71	15%
37-40	56	12%
Over 40	7	1%

Table 3 describes combined personal interview and telephone respondents in terms of age, education, marital status, ethnicity and number of dependent children. Most of the women (69 percent) were between the ages of 25 and 44, were married (76 percent) and had either none or one dependent child(ren). It should be noted that most women refused to answer how many dependent children they had primary responsibility for in the last 12 months. The majority of pregnant women interviewed were white (85 percent). Most had a high school diploma or equivalent and some college (53 percent).

Table 3 Age, Education, Marital Status, Ethnicity and Number of Dependent Children of Adult Personal Interview and Telephone Respondents

Age	Number	Percent
12-14	0	0
15-17	11	2
18-24	163	29
25-44	393	69
Over 44	0	0
Total	567	100

Education

Some Elementary	7	1
Some High School	44	8
High School Grad	174	31
Some College	124	22
2-year Associate Degree	52	9
College Graduate	125	23
Advanced Degree	29	5
Missing/Refused	12	
Total	567	100

Marital Status

Divorced	10	2
Separated	5	1
Married	421	76
Never Married	79	14
Member Unmarried Couple	39	7
Widowed	2	1
Missing/Refused	11	
Total	567	100

Race/Ethnicity

White	470	85
African American	51	9
Asian or Pacific Islander	8	1
American Indian	8	1
Aleutian	1	<1
Hispanic	10	2
White and African American	1	<1
White and American Indian	2	<1
Other	3	<1
Missing/Refused	13	
Total	567	100

Dependent Children

None	106	45
One	79	33
Two	39	16
Three	10	4
Four	3	1
Five	1	<1
Missing/Refused	329	
Total	567	100

Figure 1 shows the employment categories for the personal interview and telephone respondents. Respondents could answer "yes" to all that applied. Most respondents were employed for wages and/or homemakers. None of the respondents were retired or in regular, active military duty.

Figure 1 Occupation of Respondents

Number of Respondents

379:	Employed for wages
117:	Homemaker
28:	Self-employed
10:	Out of work for less than a year
10:	Student
8:	Unable to work
3:	Out of work for more than a year

Table 4 describes the annual household income for respondents participating in the personal and telephone interview. Most respondents were fairly evenly distributed among incomes ranging from \$10,000 to \$60,000 with a slightly higher percentage (19 percent) falling in the \$30,000 to \$40,000 income range. Eighteen respondents (three percent) reported they did not know their annual household income. The household income of Wisconsin residents in general is slightly lower (8 percent) than our survey respondents.

**Table 4 Annual Household Income of Adult
Personal and Telephone Interview Respondents**

Income		
0-<\$10,000	31	6%
10-<\$20,000	61	11%
20-<\$30,000	79	14%
30-<\$40,000	105	19%
40-<\$50,000	88	16%
50-<\$60,000	76	14%
\$60,000 or more	92	17%
Don't Know	18	3%
Missing	11	
Refused	6	

Most respondents had not been arrested in the last 12 months as shown in Table 5. For comparison purposes, about 3 percent of adult women in Wisconsin are arrested each year.

Table 5 Arrests in the Last 12 Months for Adult Personal and Telephone Respondents

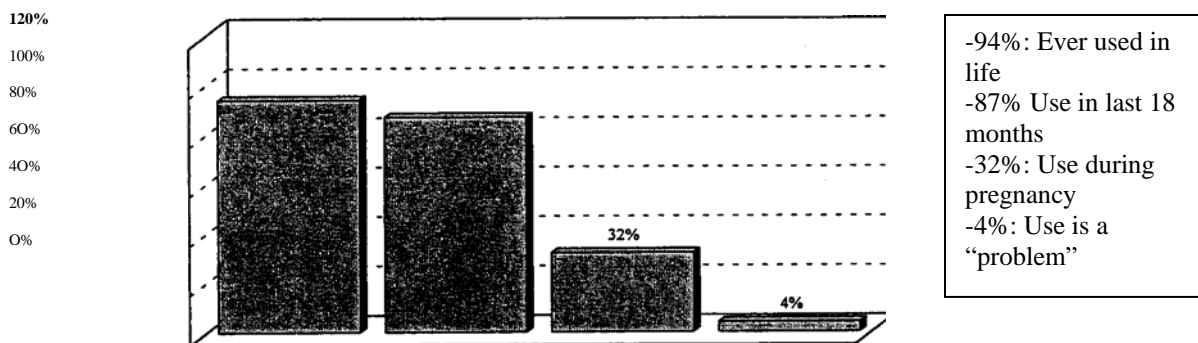
Arrests	Number	Percent
No	544	98%
Yes	12	2%

USE OF ALCOHOL AND OTHER DRUGS

Previous and Current Use of Alcohol

Figure 2 shows respondents' answers to questions about their alcohol use during the last 18 months, during pregnancy, and if they believed they had a problem with alcohol use. Eighty-seven percent of respondents admitted to using alcohol at least once in the last 18 months, 32 percent admitted to using alcohol during pregnancy, one person stated she had never used alcohol even once in her life, and four percent believed they had a problem with alcohol use.

Figure 2 Previous and Current Use of Alcohol



Previous and Current Use of Other Drugs

Table 6 shows adult in-person and telephone respondents' answers to questions about their drug use ever in their lives, during pregnancy, and if they ever felt addicted or believed they had a problem with family or others because of use. It includes self-report of hospitalizations for drug-related reasons. Also reported is information about their use of tobacco during pregnancy. When asked about use ever in their lives, 56 percent reported using marijuana, 15 percent reported using stimulants, 10 percent reported using cocaine, 9 percent reported using hallucinogens, 5 percent reported using inhalants, 4 percent reported using sedatives, 2 percent reported using analgesics or opiates other than heroin, and less than 1 percent reported using heroin. When asked about their use of these substances during pregnancy, most denied use of any except two percent reported using marijuana and less than one percent reported using cocaine; two percent reported the use of any illicit drug during pregnancy.

Table 6 Previous and Current Use of Drugs (adult in-person and telephone)

Factor	Marijuana	Hallucino- gens	Cocaine	Heroin	Analgesics/ Opiates	Sedatives	Stimulants	Inhalants	Cigarettes
Ever in life	317 (56%)	49 (9%)	59 (10%)	1 (<1%)	9 (2%)	25 (4%)	83 (15%)	29 (5%)	Not asked
Ever felt addicted	11 (2%)	2 (< 1%)	9 (2%)	0	0	1 (< 1%)	1 (<1%)	0	Not asked
Had problems	7 (1%)	2 (<1%)	8 (1%)	0	0	1 (<1%)	1 (<1%)	0	Not asked
Use in pregnancy	9 (2%)	0	1 (<1%)	0	0	0	0	0	24 (29%)
Hospitalized	0	1 (<1%)	1 (<1%)	0	0	1 (<1%)	0	0	Not asked
Injected	0	0	2 (<1%)	1 (<1%)	1 (<1%)	0	0	0	Not asked
Increased use in pregnancy	Not asked	Not asked	Not asked	Not asked	Not asked	Not asked	Not asked	Not asked	17 (13 %)
Reduced (stopped) use in pregnancy	Not asked	Not asked	Not asked	Not asked	Not asked	Not asked	Not asked	Not asked	126 (93%)
Increased use after reduced (stopped) use in pregnancy	Not asked	Not asked	Not asked	Not asked	Not asked	Not asked	Not asked	Not asked	24 (19%)

Honesty factor

When asked how truthful adult in-person and telephone respondents felt they could be in the interview about their alcohol use, 99 percent felt they could be "entirely" truthful; four respondents felt they could be "somewhat" truthful and three respondents felt they could "not at all" be truthful. One respondent felt she could be "somewhat" truthful about her use of heroin; one respondent felt she could be "not at all" truthful about her use of heroin. One respondent refused to answer how truthful she could be about her use of heroin. Twelve respondents

answered "yes" when asked if they would like the local drug and alcohol information number. Two respondents refused to answer that question.

Comparison: Self-Report To Drug Screen Results

Drug screen results were compromised by several complicating factors. In some cases, the respondent refused to provide urine or was unable to pass urine at the time of the interview. Very frequently, the interviewer had arranged to use the same urine that had been collected by clinic staff. However, the staff member forgot and discarded the urine before the interviewer went to retrieve it, and the respondent had already left the clinic. In a few cases, the urine leaked in transit to the laboratory and no test could be done. Then, the laboratory mistakenly performed an incorrect test on some urine samples. This meant specific drug testing was not included in the panel for those samples. The drugs eliminated in some of the panels were methadone, propoxyphene, and methaqualone.

A total of 384 urine samples were tested. This represents 78 percent of the in-person interview respondents. Most of these were 10-panel screens except for the few cases noted above for which the lab used the wrong test. Twenty-two percent of the urine data was missing. A total of 12 tests or 3 percent had positive urine screens, and for each of those only one drug was positive. Three screens were positive for morphine; one of these was positive for morphine and codeine, which was most likely a result of a prescribed pain medication such as Tylenol 3. Levels in the second test positive for morphine were in a range that indicated ingesting food with poppy seeds. The third test positive for morphine was a higher number, and the lab indicated it could also have been the result of a prescribed pain medication. The other nine screens were positive for marijuana. Marijuana can stay in the urine for up to six weeks. All other drugs can remain in the urine for some period of time under three days.

Of the nine positive marijuana screens, five of these respondents replied "yes" that they had used marijuana for non-medical reasons in the last 18 months, two stated they had not used marijuana for non-medical reasons in the last 18 months and two refused to answer. One question later, eight of these respondents refused to answer when asked if they had ever in their life used marijuana for non-medical reasons, and one respondent stated she had. When asked if they had ever used marijuana during pregnancy, five respondents replied "yes" and tested positive, three refused to answer and tested positive. One respondent stated she had not used marijuana while pregnant, yet tested positive.

Of the three positive morphine screens, all three respondents stated they had not used opiates or analgesics for non-medical purposes (excluding heroin) during the last 18 months. They stated that they had never in their lives used opiates or analgesics (excluding heroin) for non-medical purposes. When asked if they ever used opiates or analgesics (excluding heroin) for non-medical purposes during pregnancy, all 3 respondents refused to answer. There were no urine screens positive for heroin.

Do Perinatal Medical Practitioners Ask Pregnant Patients about Their Substance Use?

When the pregnant women respondents were asked by the interviewer if their medical practitioner had questioned them about their use of alcohol and other drugs, 78 percent of respondents replied "yes" and five percent replied that they were not sure or did not know. Seventeen percent said "no."

DSM-III-R ABUSE AND DEPENDENCE CRITERIA

Analysis was conducted on questionnaire items referring to past year drug and alcohol use that assigned adult respondents to one of four diagnoses and subsequently to one of four appropriate "levels of care" or treatment intensities using the DSM-III-R diagnosis criteria. The software used to conduct the analysis was designed by the American Society of Addiction Medicine (ASAM), and they caution that using it will provide a "conservative estimate of needs" for treatment services."

ASAM-Based Current or Ever Diagnoses

Table 7 describes the results of the analysis for the adult in-person and telephone respondents (n=567) based upon their answers to questions about their alcohol and drug use and effects they had or were having on their lives. Seven percent had a lifetime diagnosis of alcohol abuse and eight percent had a lifetime diagnosis of alcohol dependence. Two percent of respondents had a lifetime diagnosis of marijuana dependence and two percent of cocaine dependence.

Five percent of respondents had a current diagnosis of alcohol abuse and five percent current alcohol dependence. Current abuse or dependence diagnoses were also found in cocaine, marijuana and stimulants. All counted, 11 percent had a current diagnosis of abuse or dependence.

Table 7 ASAM-Based DSM-III-R Ever and Current Diagnosis (Adult In-Person and Telephone)

Type of Drug	Abuse Ever	Abuse Current	Dependence Ever	Dependence Current	Total
Alcohol	38 (7%)	26 (5%)	45 (8%)	30 (5%)	139 (24%)
Cocaine	0	0	10 (2%)	3(<1%)	13 (2%)
Hallucinogen	0	0	2 (<1%)	0	2 (<1%)
Opiate	0	0	0	0	0
Marijuana	1 (<1%)	1 (<1%)	9 (2%)	6 (1%)	17 (2%)
Sedatives	0	0	0	0	0
Stimulants	0	0	3 (<1%)	1 (<1%)	4(<1%)
Inhalants	0	0	0	0	0
Analgesics	0	0	0	0	0
Multidrug	0	0	9(2%)	2(<1%)	11 (2%) ,,

ASAM-Based Diagnosis by Population Strata

Table 8 describes the population density for combined in-person and telephone respondents categorized according to the original stratification plan of rural, urban and Milwaukee.

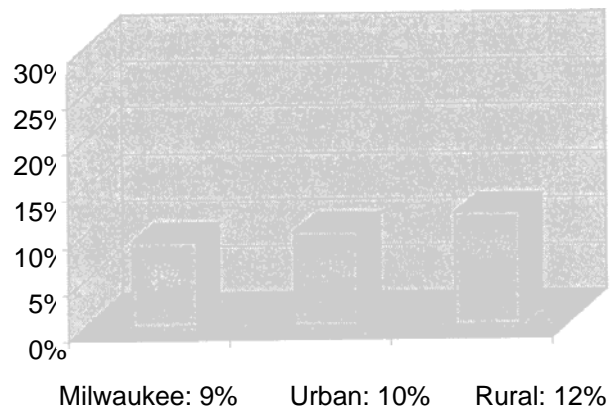
Table 8 County Population Density for Respondents

Population Density	Counties in Sample	Number of Respondents	Percent of Respondents
130 or less persons/ square mile	Ashland*, Bayfield*, Calumet, Columbia, Dodge, Douglas, Grant, Green, Iron, Jackson, Jefferson*, Monroe, Portage, Shawano, Waupaca, Wood	114	20%
131-600 persons/ square mile	Brown, Dane*, Eau Claire, Fond du Lac, Kenosha, LaCrosse, Manitowoc*, Outagamie, Ozaukee, Racine*, Rock, Sheboygan, Walworth, Washington, Waukesha, Winnebago	272	48%
Over 600 persons/ square mile	Milwaukee*	181	32%

*Personal Interview Counties

Figure 3 presents the percentage and numbers of respondents having a current alcohol abuse/dependence "diagnosis" as a result of answers to personal interview questions.

Figure 3 Percent of Respondents with Current Alcohol Abuse/Dependence by Population Strata



Note: The rural rate in the above chart is considered biased due to sample size and response rate.

MET AND UNMET DEMAND FOR TREATMENT

Respondents' answers to questions about their use of alcohol and other drugs ever were used to assess them for abuse or dependency ever as well as assign them to a level of care based upon that assessment. This level of care or treatment intensity referral based upon the ASAM diagnoses of abuse or dependence ever is shown in Table 9. Seventeen percent of respondents qualified for referral to one of four treatment levels in their lives.

Table 9 ASAM-Based Referral to Treatment Intensity (Adult In-Person and Telephone)

Level of Care	Number/Percent
Outpatient (Level I)	2 (<1%)
Partial Hospitalization/Intensive Outpatient (Level II)	82(14.5%)
Medically Monitored Inpatient (Level III)	9(1.6%)
Medically Managed Inpatient (Level IV)	2(<1%)

Treatment History

Respondents were able to answer positively to all treatment questions, and some may have experienced several types. Twenty-one respondents or four percent of the total sample reported ever having any treatment in their lives, and fourteen respondents reported ever attending AA. Two respondents reported having treatment in the last twelve months; five respondents reported attending AA in the last twelve months. Thirteen respondents reported attending counseling for alcohol/drug problems outside of a formal program; two of them had done so in the last twelve months. Ten respondents reported ever talking about the extent of their drinking or drug use to a person in the ministry; three had done so in the last twelve months. No respondents had ever had outpatient methadone maintenance. Respondents who had recent treatment experiences received funding from pre-paid health insurance plans. Table 10 describes respondents' treatment experiences.

Table 10 History of Adult Respondents' Treatment Experiences

Type of treatment	Number	Last 12 months
Detox hospital	5	No
Detox non-hospital	1	No
Detox outpatient	1	No
Residential inpatient	9	No
Residential in hospital	7	No
Residential ≥ 30 days	4	No
Residential ≤ 30 days	3	No
Halfway house	1	No
Outpatient	14	No
Intensive outpatient	7	1
Less intensive outpatient	12	1
AA attendance	14	5
Talk to clergy	10	3
Counseling	13	2

Treatment experiences compared to interview-discovered "need" for treatment based upon population strata as reported by respondents are shown in Table 11. Respondents could answer "yes" to all types of treatment modalities including AA attendance. Respondents having the most treatment resided in urban settings (57%). The next largest treatment experiences occurred in rural settings (24%). Milwaukee area residents had 19% of the total treatment experiences.

Table 11 Treatment Experience and Needs by Population Strata (n=567)

	Total	Rural	Urban	Milwaukee
Ever received treatment	21 (4%)	5 (23.8%)	12 (57.1)	4 (19%)
Need treatment "currently" according to DSM diagnosis	63 (11%)	14 (22.2%)	29 (46%)	20 (31.7%)
Received current treatment	2 (<1%)		1 (50%)	1 (50%)
Unmet demanded treatment	0		0	

Barriers to Treatment/Unmet Demand for Treatment

Twenty-one adults were eligible to be asked questions regarding their inability to get the amount, quality or style of treatment they preferred. No one answered that they experienced obstacles or barriers to treatment or not having the type or amount of treatment they felt they needed.

LIMITATIONS/SOURCES OF ERROR AND PROPOSED CORRECTIONS OR ADJUSTMENTS

The personal interview sample is not a probability sample but a purposive sample. As such, the sources of potential bias lie in whatever errors in judgement have occurred in the selection of the sample. Based upon resources available to conduct the study, every effort was made to select counties and sites that were representative of Wisconsin. As described earlier, there were no significant differences between the in-person sample and the telephone sample (which is considered to be a probability sample). The results can be projected to the entire population of Wisconsin by multiplying the sample counts by the ratio:

$$\frac{\text{Number of Females Giving Birth in Wisconsin in the Year}}{\text{Number of Females in the Combined Telephone and Personal Sample}}$$

Projections using the population strata described earlier (rural, urban, and Milwaukee) are possible, however, due to the sample size and possible sampling error, it is recommended that the total sample percentages be used to project the findings to any particular county. Any further stratification (age; ethnicity) are not likely to improve the accuracy of these projections since the differences are so small.

COMPARISONS WITH OTHER STUDIES

Prevalence Findings

In a 1995 study of women of childbearing age, New Mexico found that 27.6 percent of women reported using alcohol during pregnancy, 38 percent reported using tobacco, 13.2 percent

reported using marijuana and 4.2 percent reported using "other" drugs. Most of these figures compare to ours however, our study found only 2 percent of pregnant women reporting use of marijuana during pregnancy.

In a substance abuse survey done in 1991, South Carolina found that 1.9 percent of women used alcohol near the time of delivery based upon urine testing, which they felt was a clear under estimate. They found that 8.3 percent of delivering women used marijuana, 5.8 percent used cocaine, 9.8 percent used barbiturates and 6.7 percent used opiates.

In a 1991 survey of postpartum women, Texas found that 19 percent of mothers reported having used alcohol or illicit substances during their pregnancy. Specifically, 14 percent reported using alcohol, 7 percent reported using any illicit drug and 28 percent reported using "any harmful" substance (alcohol, tobacco, inhalants or illicit drugs). The Wisconsin study found a higher number of pregnant women reporting use of alcohol during pregnancy than the Texas study: 35 percent compared to 14 percent.

The following table presents comparative rates of alcohol and drug use during pregnancy from a number of similar studies conducted around the United States. Wisconsin and Oregon birth certificates underreport alcohol use during pregnancy.

Table 12 Substance Use Prevalence During Pregnancy Rates from Recent Studies

Study	Alcohol	Illicit Drugs
Wisconsin, 1997	32%	2% (self report)
New Mexico, 1995	27.6	13.2+
South Carolina, 1991	NA	9.8+
Texas, 1991	14	7
Rhode Island, 1989	NA	8
Oregon	21	11
National Pregnancy and Health Survey, 1992	18.8	5
Centers for Disease Control, 1991	12.4	NA
Sinai Samaritan Medical Center, Milwaukee, 1990	NA	15
National Household Survey on Drug Abuse, 1995	21	2.3
Wisconsin Birth Certificates, 1995	3.1	NA
Oregon Birth Certificates	2.7	1

CONCLUSIONS AND RECOMMENDATIONS

Earlier in this report, the authors concluded that the findings from this study of alcohol and drug abuse and treatment needs among pregnant women in Wisconsin were to be considered "low-end" estimates. Using the results from this study and state birth statistics, each year 33 percent of births are at risk for deleterious substance effects and 11 percent of pregnant women are in need of treatment. The scientific literature has concluded that substance use (alcohol or other drug use) at any time during pregnancy and in any amount increases the risk of birth and developmental abnormalities, miscarriage, and infant mortality. Rates of fetal alcohol syndrome range from .2 - 1.0 per 1000 births.

At the same time, studies (State of Washington; State of Delaware) have shown that the average medical care costs for pregnant women abusing substances and their infants are higher than their non-using counterparts. When treatment is provided, these costs decline dramatically.

We are all responsible for preventing the infliction of serious harm to infants. For pregnant women, this includes refraining from the ingestion of harmful substances when trying to become pregnant and during pregnancy. For pregnant women who are addicted to substances, help must be sought. For spouses, family members and close friends of the pregnant women, it means providing a supportive environment for her drug-free lifestyle.

Health care, human service, and W-2 professionals have the call to intervene when their client or the client's fetus might be at risk for health problems. It was gratifying to learn that in 87 percent of pregnancies, perinatal health care professionals are asking the patient about their use of alcohol and other drugs. A substance use screening tool is being used by the Wisconsin Perinatal Care Coordination Project. Furthermore, the health insurance industry must institute policies that promote effective rehabilitation of pregnant women with substance abuse problems.

Employers too can intervene through employee assistance programs. Schools and health information agencies must ensure that their students and target groups receive regular, up-to-date information about the effects of alcohol and drugs during pregnancy.

Treatment providers must reach out to pregnant women and provide effective treatment that pregnant women can access and trust. This study demonstrated that only 11 percent of pregnant women in need of addictions treatment seek and receive it. There is a need for a sustained commitment from treatment administrators and payers to fund residential treatment centers for pregnant women and women with young children where needed.

Public policy makers have the responsibility to develop humane and effective approaches to prevention and rehabilitation that promote the health of women and minimize "punishment" and infringement on constitutional rights. District attorneys and the courts should not prosecute pregnant women when there are other means for getting them into treatment.

Lastly, it is recommended that a series of public hearings or focus groups be held around the state to obtain the views of pregnant women, their families, health care professionals, health insurance industry, law enforcement, district attorneys, the courts, treatment providers, school personnel, and various cultural groups.

Appendix A - Wisconsin Birth Statistic Comparisons

Appendix A

Table 1 Telephone and In-Person Respondents vs. Births

Total Recorded Births in Wisconsin in 1996	Total Telephone Interviews (Random)	Total Personal Interviews Including Teens (Purposive)	Total Interviews Including Teens
67,150	74	493	567

Table 2 Estimates of Percent Distribution of Age of Pregnant Females and Actual Percent Distribution of Age of Pregnant Females in Wisconsin

Age	1996 Wisconsin Births	Telephone	Personal	Telephone & Personal
15-17	4%	0%	2%	2%
18-24	28%	30%	29%	29%
25-44	68%	70%	69%	69%

Table 3 Estimates of Percent Distribution of Ethnicity for Pregnant Females and Actual Percent Distribution of Ethnicity of Pregnant Females in Wisconsin

Race/Ethnicity	Total Wisconsin	Telephone	Personal	Telephone & Personal
White	82%	84%	85%	85%
Black	10%	11%	9%	9%
American Indian	1%	0%	2%	1%
Hispanic	5%	3%	2%	2%
Laotian/Hmong/Asian/Pacific Islander and Other ¹	3%	1%	2%	3%

¹Combined to match WI state categories

Appendix A

Table 4 Estimates of Percent Distribution of Education for Pregnant Females and Actual Percent Distribution of Education of Pregnant Females in Wisconsin

Education	Total Wisconsin	Telephone	Personal	Telephone & Personal
Elementary or less	3%	1%	1%	1%
Some High School	13%	10%	8%	8%
High School Graduate	33%	31%	31%	31%
Some College ²	25%	33%	32%	32% *
College Graduate	16%	16%	24%	23%
Post Graduate	10%	10%	5%	5%

Table 5 Estimates of Percent Distribution of Marital Status for Pregnant Females and Actual Percent Distribution of Unmarried (divorced, widowed, never married, member of an unmarried couple) Status of Pregnant Females in Wisconsin

Age	Total Wisconsin Percent Unmarried	Telephone	Personal	Telephone & Personal
15-17	12%	not asked	not asked	not asked
18-24	55%	67%	66%	54%
25-44	32%	33%	34%	12%

² Combined "some college" and "associate degree" from interview

Appendix A

Table 6 Percent Comparisons of Telephone and Personal interviews Combined by Selected Counties (highest number of interviews completed) for Age

County	AGE					
	15-17 years		18-24 years		25-44 years	
	WI	Highest Interviews	WI	Highest Interviews	WI	Highest Interviews
Ashland*	3%	0%	39%	37%	59%	63%
Bayfield*	1	8	29	23	70	69
Dane**	2	0	19	30	79	70
Jefferson*	2	5	27	36	71	59
Kenosha	4	0	30	36	66	64
Manitowoc*	3	0	28	27	69	73
Milwaukee*	7	2	35	27	58	72
Ozaukee	1	0	13	0	85	100
Racine*	4	1	32	32	63	67
Walworth	3	3	28	36	69	61
Washington	2	0	18	10	81	90
Waukesha	2	4	14	12	85	84

* Personal interview counties

Appendix A

Table 7 Percent Comparisons of Telephone and Personal interviews Combined by Selected Counties (highest number of interviews completed) for Race

RACE/ETHNICITY										
County	White		Black		American Indian		Hispanic		Laotian/ Hmong/Asian/Pacific Islander and Other ³	
	WI	Int ⁴	WI	Int	WI	Int	WI	Int	WI	Int
Ashland*	88%	89%	1%	0%	10%	11%	0%	0%	0%	0%
Bayfield*	83	75	0	0	17	17	1	8	0	0
Dane*	85	80	6	10	0	0	3	10	5	0
Jefferson*	94	97	0	0	0	2	5	2	1	0
Kenosha	81	100	9	0	0	0	9	0	1	0
Manitowoc*	93	98	0	0	0	0	1	0	5	2
Milwaukee*	50	66	35	24	1	2	10	3	4	5
Ozaukee	96	100	0	0	0	0	2	0	1	0
Racine*	72	91	16	8	0	0	11	0	1	1
Walworth	87	100	1	0	0	0	10	0	1	0
Washington	99	90	0	10	0	0	1	0	0	0
Waukesha	94	88	0	0	0	4	3	8	2	0

³ Combined to match WI state categories

⁴ Interview

Appendix A

Table 8 Percent Comparisons of Telephone and Personal interviews Combined by Selected Counties (highest number of interviews completed) for Education

EDUCATION												
County	Elementary or Less		Some High School		High School Graduate		Some College		College Graduate		Post Graduate	
	WI	Int	WI	Int	WI	Int	WI	Int	WI	Int	WI	Int
Ashland*	0%	0%	10%	11%	43%	37%	33%	37%	11%	16%	3%	0%
Bayfield*	1	0	6	8	42	17	25	25	15	42	11	8
Dane*	1	0	7	0	22	40	26	30	23	20	21	10
Jefferson*	1	5	9	6	39	33	27	33	15	22	9	0
Kenosha	2	0	17	5	37	36	24	46	13	9	7	5
Manitowoc*	3	0	11	2	35	37	31	42	14	15	6	5
Milwaukee*	5	2	25	11	31	34	19	26	13	22	7	6
Ozaukee	0	0	4	0	21	15	24	46	34	31	16	8
Racine*	2	1	15	9	36	29	25	29	13	27	8	4
Walworth	5	0	11	10	36	40	24	27	16	17	9	7
Washington	0	0	5	0	36	20	28	40	23	30	9	10
Waukesha	1	0	4	0	24	21	25	29	30	33	16	17

Table 9 Percent Comparisons of Telephone and Personal interviews Combined by Selected Counties (highest number of interviews completed) for Unmarried Status

UNMARRIED MOTHERS BY AGE						
County	15-17 years old		18-24 years old		25-44 years old	
	WI	Interview	WI	Interview	WI	Interview
Ashland*	10%	Not asked	57%	57%	33 %	17%
Bayfield*	2	"	54	33	38	11
Dane*	9	"	53	33	39	14
Jefferson*	9	"	57	54	34	10
Kenosha	13	"	56	25	30	14
Manitowoc*	12	"	60	9	28	20
Milwaukee*	14	"	53	75	32	12
Ozaukee	10	"	49	0	39	0
Racine*	11	"	61	45	27	8
Walworth	10	"	56	55	32	0
Washington	10	"	56	100	34	11
Waukesha	14	"	52	67	34	10

Appendix A

**Table 10 Comparison of Number of Births with
Number of Pregnant Women Respondents by County**

County	1996 Births	% of Total Births	Number of Respondents	% of Sample Births
Ashland*	234	<1	19	3
Bayfield*	149	<1	12	2
Brown	3,051	5	1	<1
Calumet	466	<1	1	<1
Columbia	616	1	3	<1
Dane*	4,977	7	10	2
Dodge	976	<1	1	<1
Douglas	532	<1	1	<1
Eau Claire	1,079	2	3	<1
Fond du Lac	1,138	2	1	<1
Grant	497	<1	1	<1
Green	408	<1	1	<1
Iron	76	<1	1	<1
Jackson	193	<1	1	<1
Jefferson*	892	<1	62	11
Kenosha	2,008	3	22	4
LaCrosse	1,236	2	2	<1
Manitowoc *	941	1	41	7
Milwaukee*	14,792	22	177	31
Monroe	557	1	1	<1
Outagamie	2,101	3	1	<1
Ozaukee	961	1	13	2
Portage	797	1	1	<1
Racine*	2,592	4	96	17
Rock	1,969	3	4	1
Shawano	458	1	1	<1
Sheboygan	1,333	2	5	1
Walworth	1,019	2	30	5
Washington	1,456	2	10	2
Waukesha	4,138	6	24	4
Waupaca	617	1	1	< 1
Winnebago	1,756	3	6	1
Wood	957	1	1	<1
Total	54,972	<81	567	<102

Table 11 Comparison of Age of Mothers Giving Birth in 1996 and Respondents in Participating Counties

County	15-17		18-24		25-44	
	WI	Int	WI	Int	WI	Int
Ashland*	6	0	90	7	138	12
Bayfield*	1	1	43	3	103	9
Brown	85	0	754	1	2205	0
Calumet	10	0	91	0	364	1
Columbia	14	0	168	0	434	3
Dane*	93	0	938	3	3935	7
Dodge	33	0	285	0	659	1
Douglas	24	0	188	0	319	1
Eau Claire	38	0	310	1	729	2
Fond du Lac	25	0	349	0	764	1
Grant	7	0	159	0	331	1
Green	7	0	114	1	287	0
Iron	2	1	21	1	53	0
Jackson	4	0	74	1	115	0
Jefferson*	21	3	239	24	632	39
Kenosha	84	0	597	8	1320	14
LaCrosse	31	0	314	0	884	1
Manitowoc*	27	0	263	11	650	30
Milwaukee*	1063	3	5063	48	8575	130
Monroe	26	0	202	0	329	1
Outagamie	45	0	474		1579	1
Ozaukee	10	0	134		816	13
Portage	18	0	212		564	1
Racine*	114	1	830	31	1637	65
Rock	86	0	676	2	1203	2
Shawano	14	0	162		281	1
Shcboygan	37		376	2	919	3
Walworth	27	1	282	11	705	19
Washington	24		255	1	1176	9
Waukesha	67	1	547	3	3518	21
Waupaca	19		182	1	415	
Winnebago	56		429	2	1268	4
Wood	38		294		624	1

Appendix A

Table 12 Comparison of Race of Mothers Giving Birth in 1996 and Respondents in Participating Counties

County	White		Black		American Indian		Hispanic		Laotian/Hmong/ Asian/Pacific Islander ⁵ and Other	
	WI	Int	WI	Int	WI	Int	WI	Int	WI	Int
Ashland*	207	17	2	0	24	2	1	0	0	0
Bayfield*	123	9	0	0	25	1	1	1	0	1
Brown	2688	1	23	0	112	0	95	0	133	0
Calumet	451	1	1	0	2	0	6	0	6	0
Columbia	599	3	0	0	2	0	12	0	3	0
Dane*	4244	8	301	0	23	0	174	1	235	1
Dodge	938	1	3	0	6	0	23	0	6	0
Douglas	493	1	5	0	16	0	2	0	6	0
Eau Claire	999	3	5	0	9	0	6	0	59	0
Fond du Lac	1082	1	12	0	5	0	25	0	13	0
Grant	486	1	1	0	0	0	6	0	4	0
Green	398	1	2	0	2	0	4	0	2	0
Iron	71	1	0	0	5	0	0	0	0	0
Jackson	172	1	0	0	16	0	5	0	0	0
Jefferson*	836	60	1	0	3	1	46	1	6	0
Kenosha	1617	22	179	0	9	0	188	0	15	0
LaCrosse	1115	2	5	0	6	0	10	0	100	0
Manitowoc*	875	40	2	0	4	0	14	0	45	1
Milwaukee*	7364	116	5238	43	114	3	1523	5	553	10
Monroe	525	1	6	0	7	0	16	0	3	0
Outagamie	1911	1	6	0	25	0	58	0	101	0
Ozaukee	927	13	2	0	1	0	16	0	15	0
Portage	728	1	1	0	4	0	15	0	49	0
Racine*	1873	87	403	7	8	0	294	0	14	1
Rock	1750	4	121	0	4	0	73	0	21	0
Shawano	408	1	0	0	43	0	6	0	1	0
Sheboygan	1180	5	4	0	4	0	46	0	99	0
Walworth	888	30	8	0	3	0	106	0	14	0
Washington	1435	9	1	1	2	0	12	0	6	0
Waukesha	3891	21	19	0	16	1	141	2	71	0
Waupaca	595	1	1	0	7	0	11	0	3	0
Winnebago	1632	6	5	0	6	0	44	0	68	0
Wood	882	1	3	0	20	0	20	0	32	0

⁵Data categories were assigned differently by WSRL and the Wisconsin Center for Health Statistics making distinguishing between these categories impossible.

Appendix A

Table 13 Comparison of Education of Mothers Giving Birth in 1996 and Respondents in Participating Counties

County	Elem or Less		Some High School		High School Graduate		Some College		College Graduate		Post Graduate	
	WI	Int	WI	Int	WI	Int	WI	Int	WI	Int	WI	Int
Ashland*	1	0	23	2	100	7	77	7	25	3	8	0
Bayfield*	2	0	9	1	62	2	37	3	22	5	17	1
Brown	127	0	321	0	967	0	770	1	615	0	248	0
Calumet	3	0	31	0	191	0	128	1	71	0	42	0
Columbia	15	0	55	0	218	1	191	0	92	1	44	1
Dane*	66	0	330	0	1088	4	1286	3	1161	2	1042	1
Dodge	3	0	108	0	437	0	267	0	103	1	58	0
Douglas	5	0	64	0	200	0	151	1	69	0	36	0
Eau Claire	60	0	91	0	303	1	313	1	169	1	140	0
Fond du Lac	13	0	125	0	468	0	309	0	149	0	72	0
Grant	7	0	38	0	176	0	168	1	72	0	31	0
Green	0	0	42	0	144	1	105	0	71	0	46	0
Iron	0	0	9	1	30	0	26	0	9	0	2	0
Jackson	1	0	21	0	101	0	48	1	12	0	10	0
Jefferson*	10	3	80	4	348	21	239	21	131	14	83	0
Kenosha	45	0	334	1	738	8	473	10	270	2	147	1
La Crosse	54	0	7	1	329	0	406	0	207	1	152	0
Manitowoc*	30	0	103	1	331	15	291	17	128	6	55	2
Milwaukee*	686	3	3667	19	4580	60	2807	46	1949	39	1100	10
Monroe	75	0	80	0	196	0	129	0	45	1	31	0
Outagamie	59	0	147	0	780	0	518	1	415	0	179	0
Ozaukee	2	0	40	0	205	2	231	6	330	4	153	1
Portage	33	0	73	0	256	0	205	1	143	0	86	0
Racine*	62	1	390	9	932	28	648	28	341	26	216	4
Rock	32	0	320	0	715	2	521	2	221	0	152	0
Shawano	11	0	44	0	212	0	125	1	41	0	24	0
Sheboygan	50	0	151	1	482	1	321	1	218	1	109	1
Walworth	48	0	108	3	365	12	244	8	163	5	91	2
Washington	3	0	74	0	520	2	401	4	329	3	128	1
Waukesha	29	0	186	0	1006	5	1021	7	1249	8	646	4
Waupaca	7	0	73	0	276	1	145	0	66	0	49	0
Winnebago	42	0	195	1	609	1	398	3	319	1	188	0
Wood	16	0	110	0	381	0	260	0	107	1	80	0

Appendix A

Table 14 Comparison of Unmarried Mothers Giving Birth by Age in 1996 and Respondents in Participating Counties

County	Age 15-17		Age 18-24		Age 25-44	
	WI	Interview ⁶	WI	Interview	WI	Interview
Ashland*	5		30	4	17	
Bayfield*	1		24	1	17	2
Brown	72		424	0	255	1
Calumet	9		38	0	18	0
Columbia	13		64	0	46	0
Dane*	86		522	1	377	0
Dodge	33		129	0	71	1
Douglas	24		91	0	48	0
Eau Claire	31		163	0	78	0
Fond du Lac	22		169	0	74	3
Grant	4		70	0	37	0
Green	7		52	0	30	0
Iron	1		2	1	4	0
Jackson	3		30	1	12	0
Jefferson*	16		97	11	57	0
Kenosha	82		357	2	193	3
La Crosse	22		145	1	79	1
Manitowoc*	24		116	1	53	0
Milwaukee*	1019		3793	36	2249	6
Monroe	21		74	0	36	15
Outagamie	374		221	0	115	0
Ozaukee	89		44	0	35	0
Portage	140		83	0	46	0
Racine*	914		555	13	245	0
Rock	598		347	1	169	3
Shawano	101		64	0	26	0
Sheboygan	210		119	2	64	0
Walworth	222		126	6	71	0
Washington	215		120	1	73	0
Waukesha	470		245	2	160	0
Waupaca	144		88	0	40	2
Winnebago	356		195	0	117	0
Wood	234		135	0	69	0

⁶ Not asked

Appendix B - Literature Review

Appendix B

The effects of alcohol and other drug abuse in our society have caused incalculable damage across generations, and no segment of our society is immune to the potential disease of addiction. One in eight adults in the United States is an alcoholic (Helzer, 1988), and one in six children has a parent who is alcoholic (Deutsch, 1982). Public awareness and concern about this problem is growing and prevention measures have increased. In Wisconsin, the number of groups joining The Alliance for a Drug Free Wisconsin grew from 20 in 1989 to 120 in 1995 indicating citizen commitment to improving substance abuse statistics (Wisconsin Office of Justice Assistance, 1996).

Drug and alcohol use and dependency in pregnant women present its own set of definitions, challenges, and results. Concern about alcohol ingestion during pregnancy dates back to the Bible where the warning appears: "Behold, thou shalt conceive and bear a son, and now drink no wine or strong drink..." (Judges 13:7). The issue was discussed in medical literature during the 19th and early 20th centuries (Niclous, 1899) (Sullivan, 1899). Clinical research on the harmful effects of alcohol on the fetus dates in this country to 1973 (Jones and Smith), when Fetal Alcohol Syndrome was recognized and named. Since then, Streissguth (1986) has conducted the most comprehensive longitudinal study of the behavioral teratology of prenatal alcohol exposure through young adulthood.

According to Finnegan (1991), addiction encompasses physical, psychological, and sociologic issues, and drug abuse among pregnant and parenting mothers is particularly devastating. Resources are few, identification is difficult, barriers to treatment are countless, and the effects on the fetus can be profound. As a result, pregnant women who abuse alcohol and other drugs are vulnerable to negative public opinion and the threat of losing their families. Nationwide, substance abuse treatment is insufficient and inadequate to meet the needs of pregnant women (Finnegan, 1991). Given negative societal attitudes, the trend towards legal intervention, and the dearth of women-specific treatment facilities, identifying at-risk women and providing help for them is difficult.

Prevalence

The purpose of this study is to determine an estimate of the prevalence of substance abuse and dependency among pregnant women in Wisconsin, corresponding treatment needs, and barriers to and gaps in such treatment. The data from this study will assist the state to more adequately meet the health needs of its citizens and families and potentially reduce health care costs.

Alcohol use by women is common; in the 1990 Household Survey done by the National Institute on Drug Abuse, almost 80% of American women surveyed reported using alcohol during their lives, 61.5% reported drinking weekly during the last year, and 44.1% reported drinking weekly during the last month (National Institute on Drug Abuse, 1990).

Determining prevalence among pregnant women is a difficult task. Barriers to collecting data in this area include: lack of funding; fears among pregnant women that they will lose their infants and/or other children; either/both lack of treatment and support services or ignorance on the part of professionals about where to send pregnant women for treatment, which renders identification

Appendix B

irrelevant; and resistance to admitting alcohol and drug problems are a health rather than a moral issue and cross gender, class, and socio-economic levels.

In Wisconsin State Statutes, Section 51.025 (1990), the secretary of the Department of Health and Social Services was required to establish a task force to address the problem of addiction to controlled substances by pregnant women and mothers of young children. As a result, a 28-member task force was established and found that statewide objective information on the incidence of alcohol and other drug use by women of childbearing age did not exist. Also, a lack of knowledge about services for these women and their families existed. The task force recommended (1991) that the state fund a hospital or office-based study to determine the incidence of alcohol and other drug use by pregnant women in Wisconsin. Based upon a survey conducted by the Task Force (1991) of individuals in eight different programs in 13 counties, a composite picture of alcohol and other drug use habits by women of childbearing age emerged with, as they commented, great variations depending upon who was surveyed (perceptions) and unclear cultural and income group differences, as most of the agencies surveyed primarily served lower income women. The task of estimating prevalence of substance abuse in pregnant women in Wisconsin with good validity and reliability scores remains within the scope of this current study.

Other studies estimating prevalence give us a picture of what we might expect to find. In a population-based study of pregnant women, Day et al (1993) found that 25% reported they had drank an alcoholic beverage during the previous month. Approximately 3% fit the criteria for binge drinking (five or more drinks on one or more occasions during the past month), and 0.6% were classified as heavy drinkers (two or more drinks a day). Illicit drug use predicted alcohol use at each time point. They also found that 40%-65% of pregnant adolescents reported drinking during pregnancy.

In the National Household Survey (1990) 15% of women ages 26-34, prime childbearing years, reported using marijuana during the last year, and 8% used during the last month. Day and Richardson (1991) found marijuana to be the illicit drug most commonly used by pregnant women.

Several studies have examined the prevalence of cocaine use by pregnant women. Most of these were conducted in large urban hospitals and identified prevalence rates from 5-17% (Day, Cottreau, Richardson, 1993). Another study (Frank et al, 1988) combined the rates of positive urine screen results with data from interviews and reported that 17% of women used cocaine during pregnancy. Day et al (1993) reviewed the literature and found that the prevalence of cocaine use during pregnancy varies according to the patient population. Streissguth et al (1991) agreed after comparing rates of cocaine use between a high-risk inner-city teaching hospital where the rate was 11% and two private hospitals serving a middle-class community where the rate was 1%.

Chasnoff, Landress, and Barrett (1990) screened urine samples from pregnant women enrolled for prenatal care at five public health clinics and twelve private obstetrical offices in one Florida county for one month. They found that among 715 women screened, 14.8% tested positive on a toxicological test for alcohol, opiates, cocaine and its metabolites, and cannabinoids. In this

Appendix B

case, they found little difference between populations and concluded the use of illicit drugs is common among pregnant women regardless of race and socioeconomic status.

In 1989, the state of Minnesota conducted an in-person Household Survey of Alcohol and Drug Use including 1,639 mothers over 18 years old. Over half reported no use of alcohol or drugs during their most recent pregnancy. When they reported use during pregnancy, the majority indicated a frequency of less than once a month. 9.3% reported use of alcohol at least once per month; 1.7% reported use of drugs regularly (caffeine, tobacco, alcohol, tranquilizers, analgesics, marijuana, inhalants, cocaine, crack, hallucinogens, heroin, and steroids). In this study, 30% of women reported smoking during their most recent pregnancy, 21% on a daily basis.

In rural Minnesota, Yawn (1991) studied prenatal drug exposure involving 250 births from 4 rural hospitals using both mother's urine and baby's meconium. She found a 1.3% marijuana use rate, 1.6% opiate use, 0.1% cocaine use, 0.8% amphetamine use, and 0.0% Phencyclidine (PCP) use with a combined rate of 3.9% for all drug use. She concluded that low drug use rates were found among rural pregnant women. She also found that mothers who reported smoking during pregnancy were more likely to test positive for other substances: of the 37 women found to have positive urine or meconium screens for drugs, 32 admitted to smoking during pregnancy.

In 1991, the state of South Carolina performed anonymous urine and meconium screens in 24 hospitals. They found that 1 in 4 infants born had mothers who used alcohol, illegal drugs, or non-prescribed drugs. Based on urine testing, 12.1% of mothers used alcohol and drugs; based on meconium testing, 22.4% used alcohol and other drugs; based on both testing methods, the percentage rose to 25.8%. They found that based on urine screen, women whose main source of prenatal care was a hospital clinic or private doctor are 3-5 times more likely to use barbiturates and opiates than women whose main source of prenatal care was at the health department. South Carolina's substance abuse survey done in 1995 included women who were pregnant within the last 12 months. 50.9% of women participating reported marijuana use, 0.2% reported use of hallucinogens, and 0.2% reported using cocaine/crack. Along with this data, they found that 25% of all South Carolina delivering women or infants test positive for alcohol or illicit drugs. Vaughn et al (1993) attempted to determine the community-wide prevalence of illicit drug use in delivering women in Jacksonville, Florida and to compare rates in women delivering in an urban center with those delivering in private hospitals. They found that the percentage of women with positive urine toxicology was 7.1% and that positive results were more frequent in the public hospital population (12.7%) than the private hospital population (3.9%). The prevalence of cocaine use was 2.1% and marijuana 5.3%. Also, women with positive screens for cocaine were more likely to use tobacco and alcohol, admit to substance abuse, and receive limited prenatal care.

Recently, the National Institute on Drug Abuse (1994) collected self-report data over a four-year period from 2,613 women who delivered in 52 metropolitan and non-metropolitan District of Columbia area hospitals. They estimated 5.5% of women used some illicit drug during pregnancy; 2.9% reported marijuana use, 1.1% reported cocaine use. 18.8% of the women reported use of alcohol and 20.4% smoked cigarettes at some time during their pregnancy.

Appendix B

Again, there was a strong link between cigarette smoking and alcohol use and the use of illicit drugs, as 32% who reported use of one drug also reported smoking cigarettes and drinking alcohol. In their study, there was no total discontinuation of drug use.

Caucasian small-city pregnant adolescents were studied by Kokotailo, Langhough, Smith-Cox, Davidson, and Fleming (1994) to determine the prevalence of cigarette, alcohol, and other drug use and associated factors of use. They found that 35% of patients were positive for alcohol or other drug use by questionnaire self-report, provider report, or initial urine drug screening test. 13% were positive for at least one drug metabolite in the urine. She found her data comparable to previous inner-city data.

In a 1991 survey of postpartum women along with umbilical cord testing of their babies, the state of Texas found that 19% of mothers had used alcohol or illicit substances during their pregnancy. They concluded their report with strong recommendations for non-threatening interventions for women with substance abuse problems, appropriate programs for pregnant users of licit and illicit substances, accessible prenatal care, and promotion of a healthy environment for both mother and child.

Effects of Alcohol and Other Drugs on the Fetus/Newborn

The teratogenic (harm producing) potential of alcohol has been recognized for centuries. When consumed chronically in high doses during pregnancy, alcohol can produce a diverse pattern of congenital malformations known as fetal alcohol syndrome in offspring (Jones et al, 1973). These abnormalities range from prenatal and postnatal growth deficits to dysfunctions in the central nervous system, manifested as intellectual and behavioral deficits (Abel and Sokol, 1986). Among alcoholic women who drink during pregnancy, approximately 35-40% of their offspring will have fetal alcohol syndrome (Abel, 1984). Many other offspring will show less obvious but just as devastating effects, including fetal alcohol effects (FAE) or alcohol-related-birth-defects (ARBD) (Sokol and Clarren, 1989). Hyperactivity and attention deficit disorder often are identified in retrospective clinically referred samples of children diagnosed with FAS and FAE (Nanson, 1990), and research continues on as yet unknown but suspected effects of prenatal alcohol use for which no safe amount is known. Recent work suggests that alcohol may be teratogenic to the developing immune system, resulting in impaired immuno-competence in people with FAS. Alcohol-related birth defects cause significant lifetime disabilities and it is clear that this a major public health problem, particularly when we also consider the impact of exposure to alcohol on the larger number of children whose deficits appear milder (Coles, 1993). Prevention of FAS is a national health priority included in the Healthy People 2000 objectives for health promotion and disease prevention (US Department of Health and Human Services, 1990).

Prenatal cocaine use has been associated by Chasnoff (1987) with infants who have increased tremulousness and startles, decreased interactive behaviors, and increased state lability, but, according to Zuckerman and Bresnahan (1991), if long term behavioral and developmental problems are identified, how much of these problems is the result of caretaker dysfunction and how much is due to biologic vulnerability created by prenatal cocaine exposure need to still be determined. Dixon et al (1990) recommends that, because many mothers who use cocaine are

Appendix B

also marijuana and alcohol abusers, it is important to consider the combined effects of these substances on uterine growth, along with possible growth retardation and microcephaly caused by infectious diseases.

Zuckerman and Bresnahan (1991) review the literature regarding intrauterine heroin and methadone exposure and find that low birthweight is reported. And opiate exposure appears to affect intrauterine linear growth, although by 18 months of age infants catch up to normal size.

According to Richardson et al (1993), the effect of marijuana use during pregnancy on obstetric complications has not been studied extensively but little or no risk seems to exist. Also, studies on gestational age effects are inconclusive, growth effect and conflicting, morphologic abnormalities do not seem to occur, negative neurobehavioral outcomes are uncertain. Based upon his research with young children, Fried (1991) thought it reasonable to hypothesize that the effects of prenatal exposure to marijuana manifest themselves in subtle deviations and non optimal performance, not visible when tested by the most widely used infant assessment tools. In research reported two years later, Fried (1993) found that at age 4, children in his sample tested significantly inferior to other children on tests of verbal ability and memory. Supporting this finding, Day et al (1994) found there were significant negative effects of prenatal marijuana exposure on the performance of 3-year-old children on the Stanford-Binet Intelligence Scale. The effects were associated with exposure during the first and second trimesters of pregnancy. Among the offspring of white women, these effects were moderated by the child's attendance at preschool/day-care at age three.

In summarizing all perinatal substance abuse research outcomes, Richardson et al (1993) counsel that there is a pressing need for an understanding of the complex interactions that result in drug-exposed children being vulnerable to poorer outcomes, whether from direct teratogenic exposure or indirectly through the environment of the drug-using mother. And, Zuckerman and Bresnahan (1991) advise that drug-abusing women need more than the counseling and support provided in most child development or early intervention programs; they need drug treatment.

Pregnant Women-specific Treatment

Gearhart et al (1991) summarizes differences between men and women in terms of their use of alcohol as well as their metabolizing of alcohol. Citing the research literature, they show how women differ from men. Since society traditionally considers alcoholism less acceptable in women than in men, women tend to drink at home and conceal their drinking behavior. This means women who abuse alcohol are harder to identify and help. Since they have a higher percentage of body fat and a lower percentage of body water than men, the same amount of alcohol causes more severe toxic effects such as liver disease, cerebral atrophy, breast cancer frequency (implicated), gynecologic and endocrine dysfunction, and complications during pregnancy.

Depression and other psychiatric illnesses often occur in conjunction with alcoholism, and alcoholic women outnumber alcoholic men in both attempted and completed suicides. Women

Appendix B

have higher blood alcohol levels than men do when the same amount of alcohol is consumed. Moreover, women are more likely than men to have multiple drug addictions and to have more drugs prescribed in excessive doses. Finally, she warns that certain issues must be addressed in order to provide effective treatment programs for women. They may be unable to attend if they have no one to care for their children. Also, husbands of alcoholic women tend to be less supportive of their wives' treatment than wives of alcoholic men. The process of a woman's recovery may include more social, family, and financial problems leading her to quit treatment early and increase the odds of relapse.

Finkelstein (1994) warns that treatment issues for women must include sensitivity towards the role of violence in their lives. In their relationships, they often experience battering, child abuse, rape, incest, and random community-wide violence. Many substance-abusing women have been victims of violence throughout their lives, even if subtle. She recommends treatment professionals attend to this component and consider this an important aspect in the process of recovery. Considering the importance of relationship in women's lives, a woman's significant other must be involved in treatment, especially if they will continue to be involved in the woman's life.

Relationship and gender issues are at the forefront in considering women's treatment. Amaro and Hardy-Fanta (1995) looked at four areas in which relationships with male partners ran counter to women's needs for connection. They interviewed 35 pregnant drug-using women in Boston and concluded that while peers introduced women to gateway drugs (alcohol and marijuana), male partners were generally the ones that introduce young women to harder drugs as well as continue their use by being their supplier. They also found that the women they interviewed experienced strong and persistent opposition to entering treatment from their partners. They concluded that what seems most critical in designing treatment programs for women is to recognize that they enter treatment with a history of disconnection and a search for connection.

The Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Treatment's (1994) mandate to women's treatment providers includes: engender hope and empowerment, ensure safe, secure, and supportive environments, establish trusting relationships between women clients and staff, provide advocacy in accessing all services needed, promote self responsibility, self sufficiency, and interdependence, strive for gender specific and culturally relevant client-driven services, eliminate labeling of women and their children in all respects, and build the effective linkages and networking required for model women's programs.

Public Policy

Complications that result from ingestion of alcohol and other drugs during pregnancy present increased holistic hardship to society in terms of economic burden and health and well being. In Wisconsin, the Task Force to Combat Alcohol and Other Drug Use by Pregnant Women and Mothers of Young Children (1991) estimated that, based on state and national surveys, one in four pregnant women (18,000) in Wisconsin consume alcohol during their pregnancy, and three

Appendix B

in four women of child bearing age in Wisconsin (700,000) consume alcohol. Moreover, they estimated that about one in ten pregnant women (7,900) in Wisconsin use cocaine or other illegal drug, and one in seven women of childbearing age in Wisconsin (145,000) use illegal drugs, including cocaine. When a baby has had prenatal exposure to alcohol and/or other drugs, the cost to society of caring for that baby becomes incredibly burdensome.

Since the mid-1970s there has been a dramatic increase in the number of investigations devoted to the determination of the effects on development of prenatal exposure to various substances and communities have responded to address the problem. In Wisconsin, the Task Force to Combat Alcohol and Other Drug Use by Pregnant Women and Mothers of Young Children sent recommendations to the state Department of Health and Social Services. They stressed policy maker's responsibility to understand and help pregnant women get services, a positive approach rather than a punitive stance, early identification and a coordinated effort among health care workers, special services which a women-specific and holistic, services for children from affected families, money allocated for prevention activities through the community, funding in general, which would ultimately save money in the community, data collection on an ongoing basis followed by up-to-date trainings, and leadership on the part of government agencies (1991).

Recommendations to Physicians

Often, physicians neglect to thoroughly assess the mothers and babies to determine if they are at risk for alcohol and other drug complications in the pregnancy or after. Physicians can play an important role in prevention of alcohol-related birth defects as well as problems caused by abuse of licit and illicit drugs by assessing their patients and exploring successful intervention strategies. LaFlash, et al (1993) recommended doctors routinely evaluate pregnant patients for alcohol consumption and provide information about the risks to the fetus so women can make healthy decisions about drinking and enter treatment early in the pregnancy if it is indicated. Because intervention can improve functioning and adaptation of the child born to a substance abusing woman, Greer et al (1990) recommend pediatricians ask about problems with alcohol in taking a family history. In a study of pediatrician's knowledge and practices regarding alcohol use by parents, they found that fewer than half of pediatricians asked about problems with alcohol in the family.

Appendix B

Bibliography

Abel, E.L. (1984). Fetal alcohol syndrome and fetal alcohol effects. New York: plenum Press.

Abel, E.L., & Sokol, R. J. (1991). A revised conservative estimate of the incidence of FAS and its economic impact. Alcoholism: Clinical and Experimental Research, 15(3), 514-524.

Amaro, H. & Hardy-Fanta, C. (1995). Gender relations in addiction and recovery. Journal of Psychoactive Drugs, 27(4), 325-337.

American Association of Public Health, "The Nation's Health." (1995). Center for Substance Abuse Treatment (CSAT), Division of Clinical Programs. Women and Children's Branch. Practical approaches in the treatment of women who abuse alcohol and other drugs. U.S. Government Printing Office, Washington, DC, 1994. P.5

Amundson, J., Stewart, K., & Valentine, L. (1992) Temptations of Power and Certainty. unpublished paper.

Chasnoff, I. J., Landress, H.J., & Barrett, M. E. (1990). The prevalence of illicit-drug or alcohol use during pregnancy and discrepancies in mandatory reporting in pinellas county, Florida. The New England Journal of Medicine, 322(17), 1202-1206.

Coles, C. D. (1993). Impact of prenatal alcohol exposure on the newborn and the child. Clinical Obstetrics and Gynecology, 36(2), 255-267.

Day, N.L., Cottreau, C.M., & Richardson, G.A. (1993). The epidemiology of alcohol, marijuana, and cocaine use among women of childbearing age and pregnant women. Clinical Obstetrics and Gynecology, 36(2), 232-245.

Day, N.L., & Richardson, G. (1991). Prenatal marijuana use: epidemiology, methodological issues and infant outcome. Cited in: I. Chasnoff, ed. Clinics in Perinatology. Philadelphia, PA: W. B. Saunders Co. 18, 77-92.

Day, N.L., Richardson, G.A., Goldschmidt, L., Robles, N., Taylor, P..M, Stoffer, D.S.,Cornelius, M.D., & Geva, D. (1994). Effect of prenatal marijuana exposure on the cognitive development of offspring at age three. Neurotoxocologg and Teratology, 16(2), 169-175.

Deutsch, C. (1982). Broken Bottles, Broken Dreams: Understanding and Helping the Children of Alcoholics. New York, NY: Teachers College Press, Columbia University, 1982.

Dixon, S.D., Bresnahan, K., & Zuckerman, B. (1990). Cocaine babies: meeting the challenge of management. Contemporary Pediatrics, June, 70-92.

Appendix B

Finnegan, L. P. (1991). Perinatal substance abuse: comments and perspectives. Seminars in Perinatology, 15(4), 331-339.

Frank, D.A., Zuckerman, B.S., Amaro, H., Aboagye, K., Bauchner, H., Fried, L., Hingson, R., Kayne, H., Levenson, S. M., Parker, S., Reece, H., & Vinci, R. (1988). Cocaine use during pregnancy: prevalence and correlates. Pediatrics, 82, 888-895.

Fried, P. A. (1991). Marijuana use during pregnancy: consequences for the offspring. Seminars in Perinatology, 15(1), 280-287.

Fried, P. A. (1993). Prenatal exposure to tobacco and marijuana: effects during pregnancy, infancy, and early childhood. Clinical Obstetrics and Gynecology, 36(2), 319-337.

Gearhart, J., Beebe, D.K., Milhorn, H.T., & Meeks, G. R. (1991). Alcoholism in women. American Family Physician, 44(3), 907-913.

Greer, S.W., Bauchner, H., & Zuckerman, B. (1990). Pediatricians knowledge and practices regarding parental use of alcohol. American Journal of Diseases of Children, 144, 1234-1237.

Helzer J, & Pryzbeck T. (1988). The co-occurrence of alcoholism with other psychiatric disorders in the general population and its impact on treatment. Journal of Studies in Alcoholism, 49, 219-2214.

Jones, K.L., & Smith, D.W. (1973). Recognition of the fetal alcohol syndrome in early infancy. Lancet, 2, 989.

Jones, K.L., Smith, D.W., Ulleland, C.N., & Streissguth, A.P. (1973). Pattern of malformation in offspring of chronic alcoholic mothers. Lancet, 1(7815), 1267-1271.

Kokotailo, P.K., Langhough, R. E., Smith-Cox, N, Davidson, S. R., Fleming, M. F.(1994). Cigarette, alcohol and other drug use among small city pregnant adolescents ~ Journal of Adolescent Health, 15(5), 366 -373.

LaFlash, S., Aronson, Richard A., & Uttech, S. (1993). Alcohol use during pregnancy: implications for physicians. Wisconsin Medical Journal, Sept., 501-506.

Minnesota Household Survey, 1989. In Minnesota Department of Human Services Chemical Dependency Division, Research News, Jan., 1993, 1-6.

Nanson, J.L., & Hiscock, M. (1990). Attention deficits in children exposed to alcohol prenatally. Alcoholism: Clinical and Experimental Research, ~14, 656.

National Institute on Drug Abuse, A National household survey on drug abuse: population estimates, @ 1990. Rockville, Maryland: Department of Health and Human Services, 1991, DHHS publication no. (ADM) 91-1732.

Appendix B

National Institute on Drug Abuse, National pregnancy and health survey, @ Sept, 1994.

New Mexico Department of Health. (1995). The prevalence of alcohol, tobacco, marijuana and other drug use among women seeking pregnancy tests in public and private health clinics in new mexico, 1994. Summary Report.

Niclaus, M. (1899). Sur le passage de l'alcool ingere de la mere au foetus, en particulier chez la femme. @ Canadien Royal Societe de Biologic, 51,980. Cited In Coles.

Richardson, G. A., Day, N.L., & McGauhey, P. J. (1993). The impact of prenatal marijuana and cocaine use on the infant and child. Clinical Obstetrics and Gynecology, 36(2), 302-317.

Sokol, R.J., Clarren, S.K. (1989). Guidelines for use of terminology describing the impact of prenatal alcohol on the offspring. Alcoholism: Clinical and Experimental Research, 13, 597.

South Carolina Prevalence Study of Drug Use Among Women Giving Birth (1991).

Streissguth, A.P. (1986). The behavioral teratology of alcohol: performance, behavioral and intellectual deficits in prenatally exposed children. In: West J, ed. Alcohol and Brain Development. New York: Oxford University Press, 1986, 3.

Streissguth, A.P., Grant, T.M., Barr, H.M., Brown, Z.A., Martin, J.C., Mayock, D.E., Ramey, S.L., Moore, L. (1991). Cocaine and the use of alcohol and other drugs during pregnancy. American Journal of Obstetrics and Gynecology, May, 164-1239.

Sullivan, W.C. (1899). A note on the influence of maternal inebriety on the offspring. Journal of Mental Science, 45, 489. Cited in Coles. Task Force to Combat Alcohol and Other Drug Use by Pregnant Women and Mothers of Young Children (1991). Executive Summary.

Texas Commission on Alcohol and Drug Abuse, (1991). 1990 Texas survey of postpartum women and drug exposed infants

The Holy Bible, Authorized king James Version, London and New York.

U.S. Department of Health and Human Services. Healthy people 2000: National health promotion and disease prevention objectives. @ (1990). DHI-IS Pub. No. (PHS) 91-50212.

Vaughn, A.J., Carzoli, R.P., Sanchez-Ramos, L., Murphy, S., Khan, N., & Chiu, T. (1993). Community-wide estimates of illicit drug use in delivering women: prevalence, demographics, and associated risk factors. Obstetrics and Gynecology, 82(1), 92-96.

Wisconsin Clearinghouse Prevention Resource Center. Alcohol and other drug use by pregnant women: the news is not good. (1991), Prevention Outlook, 1, (2), 1-2.

Appendix B

Wisconsin Office of Justice Assistance Statistical Analysis Center, (1996). Drug problems in Wisconsin: a discussion of numbers and facts relating to the drug abuse problem. Report

Wisconsin State Statutes. Section 51.025 (1990)

Yawn, Yawn, and Uden, 1991. In Minnesota Department of Human Services Chemical Dependency Division, Research News, Jan., 1993, 1-6.

Zuckerman, B., & Bresnahan, K. (1991). Developmental and behavioral consequences of prenatal drug and alcohol exposure, Pediatric Clinics of North America, 38 (6), 1387-1406.